

Drum With Modulated Acoustic Air Vent

Background Of The Invention

Field Of The Invention

This invention shows new and improved drum assemblies having a
5 modulated acoustic air vents.

Brief Description Of The Prior Art

Conventional drums consist of a hollow drum shell having one or more
drumheads held in place by head hoops. Conventional drums may have an
acoustic air vent but they are not adjustable in size.

Summary Of The Invention

10 It is therefore an object of the present invention to provide a new and
improved drum assembly that is tunable in use to vary the pitch thereof.

Another object of the invention is to provide a new and improved drum
assembly having means to adjust air exhausting from the drum to vary the tone
15 of the drum.

Another object of the invention is to provide a new and improved drum
assembly having an air vent controllable in size to vary the tone of the drum.

Another object of the invention is to provide a new and improved drum
assembly having an air vent controllable in size to vary the stick response of
20 the drum.

Another object of the invention is to provide a new and improved drum
assembly having an air vent controllable in size to vary the volume of the drum.

Another object of the invention is to provide a new and improved drum assembly having an air vent controllable in size to vary the timbre of the drum.

Another object of the invention is to provide a new and improved drum assembly having an air vent comprising openings controllable in size to vary the tone of the drum during use.

Another object of the invention is to provide a new and improved drum assembly having a plurality of air vent openings and valve means operable adjust the size of the openings in size to vary the tone of the drum.

Another object of the invention is to provide a new and improved drum assembly having a plurality of air vent openings and individually worked valve means operable adjust the size of the openings in size to vary the tone of the drum.

Another object of the invention is to provide a new and improved drum assembly having a plurality of air vent openings and simultaneously worked valve means operable adjust the size of the openings in size to vary the tone of the drum.

Other objects of the invention will become obvious throughout the specification and claims as later related.

Brief Description Of The Drawings

Fig. 1 is an exploded isometric view of a standard drum assembly showing a drum shell with a plurality of acoustic air vent holes midway up the shell, and a ring member positioned inside to vary the size of the air vent openings.

Fig. 2 is an exploded isometric view of another drum assembly showing a drum shell having a plurality of acoustic air vent holes next to the lower drumhead and a ring member positioned inside to vary the size of the air vent openings.

5 **Fig. 3 is an exploded isometric view of a standard drum assembly showing a drum shell having a plurality of acoustic air vent holes next to the upper drumhead, and a ring member positioned outside to vary the size of the air vent openings.**

10 **Fig. 4 is an exploded isometric view of a standard drum assembly showing a drum shell having a plurality of acoustic air vent holes beside the upper drumhead, having a ring member positioned inside the shell to vary the size of the air vent openings, and showing a wedge member in the ring member for locking it in place.**

Fig. 4a is an isometric detail view of the locking bolts used in Fig. 4.

15 **Fig. 5 is an exploded view of a drumhead ring having air vent openings and a ring member positioned outside to vary the size of the air vent openings.**

Fig. 6 is an exploded view of a drumhead ring having air vent openings and a ring member positioned inside to vary the size of the air vent openings, and showing a wedge member in the ring member for locking it in place.

20 **Fig. 7 is an isometric view of a standard drum assembly showing a drum shell having one plurality of acoustic air vent holes next to the bottom drumhead, and a drumhead ring having air vent openings, and a pair of ring members.**

bers positioned inside the shell to vary the size of the air vent openings, and showing a member for using the ring members together.

Fig. 7a is an isometric view of the pair of ring members shown in Fig. 7.

Fig. 8 is an isometric fragment view of a standard drum assembly showing a drum shell having one plurality of acoustic air vent holes beside to the bottom drumhead, and a drumhead ring having air vent openings, and a pair of ring members positioned inside the shell to vary the size of the air vent openings, and showing external members for working the ring members together.

Fig. 8a is an exploded isometric fragment view of one of the ring members shown in Fig. 8 and one of the external members for working the ring members.

Fig. 8b is an exploded isometric fragment view of one of the ring members shown in Fig. 8 and the handle of the external members for operating the ring members.

Fig. 8c is an exploded isometric fragment view of one of the ring members shown in Fig. 8 with a spring applying compression to expand the ring member, and a bolt for connecting an external member supporting a handle for working the ring members.

Fig. 9 is an isometric view of a standard drum assembly showing a drum shell having a plurality of acoustic air vent holes beside to the top drumhead, and disk members rotatable back and forth to vary the size of the air vent openings.

Fig. 10 is an isometric view of a standard drum assembly showing a drum shell having a plurality of acoustic air vent holes beside to the top drumhead, and slide members slidable up and down to vary the size of the air vent openings.

Fig. 11 is an isometric view of a standard drum assembly showing a drum shell having a plurality of acoustic air vent holes beside to the top drumhead, slide members slidable up and down to vary the size of the air vent openings, and a ring member connected to the slide members to move them up and down together.

Description Of Preferred Embodiments

Example 1

Referring to the drawings by numerals of reference, and more particularly to Fig. 1 there is a drum assembly 10 having upper and lower drumheads.

Conventional adjusting screws secure tensioning hoops 11 and 12 to lugs on drum shell 13. Adjustment of the bolts or screws varies the tension in the drumhead skin or diaphragm to tune the sound output of the drumheads.

Drum shell 13 has a plurality of acoustic vent openings or slots 14 positioned about halfway up the shell allowing air to exit from the interior of the drum. The adjustment of the acoustic openings allows variation in venting of air from the drum for controlling volume, pitch, tone, timbre, and stick response.

A ring member 15 with slots 16, shown exploded above the drum shell, has a sliding fit inside drum shell 13 with slots 16 aligned with slots 14 when fully opened and movable on rotation to a position closing slot 14. Bolts 17,

having square heads operated by a drum key, extend through a pair of slots 14 on opposite sides of the drum shell, and, on tightening, secure ring member 15 in place.

OPERATION

5 With the drumhead secured on the open upper end of drum shell 13, the drum is ready for use. Bolts 17 operated by a drum key allow rotation of ring 15 to any needed position between fully open (slots 14 and 16 fully aligned) and fully closed (the imperforate portion of ring 15 covering slots 14). This adjustment of the acoustic openings allows variation in venting of air from the
10 drum for controlling volume, pitch, tone, timbre, and stick response.

Example 2

Referring to the drawings by numerals of reference, and especially to Fig. 2, there is a drum assembly 20 having upper and lower drum tensioning rings 21 and 22 supported on drumshell 23. Conventional adjusting screws
15 secure drum-tensioning rings 21 and 22 on the drum shell 23. Adjustment of the bolts or screws varies the tension in the drumhead skin or diaphragm to tune the sound of the drumheads.

Drum shell 23 has a plurality of acoustic vent openings or slots 24 positioned next to the lower drumhead, which allow air to exit from the interior of
20 the drum. This adjustment of the acoustic openings allows variation in venting of air from the drum for controlling volume, pitch, tone, timbre, and stick response.

A ring member 25 with slots 26, shown exploded above the drum shell, has a sliding fit inside drum shell 23, with slots 26 aligned with slots 24 when

fully opened, and movable on rotation to a position closing slots 24. Bolts 27, having square heads worked by a drum key, extend through a pair of slots 24 on opposite sides of the drum shell, and on tightening secure ring member 25 in place.

OPERATION

When the drumhead is secured on the open upper end of drum shell 23, the drum is ready for use. Bolts 27, operated by a drum key, allow rotation of ring 25 to any needed position between fully open (slots 24 and 26 fully aligned) and fully closed (the imperforate portion of ring 25 covering slots 24). This adjustment of the acoustic openings allows variation in venting of air from the drum for controlling volume, pitch, tone, timbre, and stick response.

Example 3

Referring to the drawings by numerals of reference, and especially to Fig. 3 shows a drum assembly 30 having upper and lower drum tensioning hoops 31 and 32 supported on drum shell 33. Conventional adjusting screws cure drum-tensioning hoops 31 and 32 to lugs on the drumshell. Adjustment of the bolts or screws varies the tension in the drumhead skin or diaphragm to tune the sound of the drumheads.

Drum shell 33 has a plurality of acoustic vent openings or slots 34 positioned next to the lower drumhead, which allows air to exit from the interior of the drum. This adjustment of the acoustic openings allows variation in venting of air from the drum for controlling volume, pitch, tone, timbre, and stick response.

A ring member 35 with slots 36, shown exploded above the drum shell, has a sliding fit outside the drum shell 33. Slots 36 are aligned with slots 34 when fully opened and movable on rotation to a position closing slots 34. Bolts 37, having square heads, worked by a drum key, extend through a pair of slots 34 on opposite sides of the drum shell, and on tightening secure ring member 35 in place.

OPERATION

With the drumhead secured on the open upper end of drumshell 33, the drum is ready for use. Bolts 37, worked by a drum key, allow rotation of ring 35 to any needed position between fully open (slots 34 and 36 fully aligned) and fully closed (the imperforate portion of ring 35 covering slots 34). This adjustment of the acoustic openings allows variation in venting of air from the drum for controlling volume, pitch, tone, timbre, and stick response.

Example 4

Referring to the drawings by numerals of reference, and especially to Figs. 4 and 4a shows a drum assembly 40 having upper and lower drum tensioning hoops 41 and 42 supported on drum shell 43. Conventional adjusting crews secure drum-tensioning hoops 41 and 42 to lugs on the drum shell 43. This adjustment of the acoustic openings allows variation in venting of air from the drum for controlling volume, pitch, tone, timbre, and stick response.

Drum shell 43 has a plurality of acoustic vent openings or slots 44 positioned next to the lower drumhead, which allows air to exit from the interior of the drum, avoiding a dampening of the sound that would occur in a tightly closed drum.

An imperforate ring member 45, shown exploded above the drum shell, has a sliding fit up and down inside the drum shell 43 to cover and uncover slot 44. Bolts 47, having square heads worked by a drum key, extend through a pair of angled slots 46 on opposite sides of the drum shell, and on tightening
5 secure ring member 45 in place.

OPERATION

With the drumhead secured on the open upper end of drum shell 43, the drum is ready for use. Bolts 47 worked by a drum key move in angled slots 46 to move ring 45 to any needed position between fully open and fully closed.
10 This adjustment of the acoustic openings allows variation in venting of air from the drum for controlling volume, pitch, tone, timbre, and stick response.

Example 5

Referring to the drawings by numerals of reference, and especially to Fig. 5, shows an upper drum tensioning hoop or ring 51 supported on a drum
15 shell as in the other Examples. Ring 51 has a rim 52 with a plurality of acoustic slots 53.

A ring member 54, shown exploded above the drum rim 52, has slots 55, which match slots 53 on assembly. Bolts 56, having square heads 57 for operation by a drum key, extend through a pair of the slots 53, 55 on opposite
20 sides of the drum ring member 54. Bolts 56, when extended, may rotate ring member 54, to secure it in place.

Ring member 54 positioned outside rim 52 may be rotated. Slots 53, 55 are acoustic vent openings matching to the ones in the other examples, which allows air to exit from the interior of the drum. This adjustment of the acoustic

openings allows variation in venting of air from the drum for controlling volume, pitch, tone, timbre, and stick response.

OPERATION

With the drumhead secured on the open upper end of a drum shell, the drum is ready for use. Bolts 57 worked by a drum key move in slots 53 to position member 54 at any needed location of slots 53, 55 between fully open and fully closed. This adjustment of the acoustic openings allows variation in venting of air from the drum for controlling volume, pitch, tone, timbre, and stick response.

Example 6

Referring to the drawings by numerals of reference, and especially to Fig. 6, shows an upper drum tensioning hoop or ring 61 to be supported on a drum shell as in the other Examples. Ring 61 has a rim 62 with a plurality of acoustic slots 63.

A ring member 64, shown exploded above the drum rim 62, has slots 65, which match slots 63 on assembly and is split at 69. Bolts 66, having square heads 67 worked by a drum key, extend through a pair of the slots 63, 65 on opposite sides of the drum ring member 64. Bolts 66, when extended, are used to rotate ring member 64. A wedge member 68 fits between the ends of split 69, and, on tightening of one of the bolts 66, secures ring member 64 in place.

With ring member 64 positioned inside rim 62, it may be rotated. Slots 63, 65 are acoustic vent openings similar to the ones in the other examples. This adjustment of the acoustic openings allows variation in venting of air from the drum for controlling volume, pitch, tone, timbre, and stick response.

OPERATION

With the drumhead secured on the open upper end of a drum shell, the drum is ready for use. Bolts 67 operated by a drum key and move in slots 63 to move ring member 64 to any needed position of slots 63, 65 between fully open and fully closed. This adjustment of the acoustic openings allows variation in venting of air from the drum for controlling volume, pitch, ton , timbre, and stick response. Wedge member 68 fits between the ends of split 69, and, on tightening of one of the bolts 66, secures ring member 64 in place.

Example 7

Referring to the drawings by numerals of reference, and especially to Figs. 7 and 7A shows a drum assembly 70 with upper and lower drum tensioning hoops 71 supported on drum shell 72. Drum tensioning hoops 71 and 72 are secured on the drum shell 72 by conventional adjusting screws. Adjustment of the bolts or screws varies the tension in the drumhead skin or diaphragm to tune the sound of the drumheads.

Drum shell 72 has a plurality of acoustic vent openings or slots 73 positioned near the lower hoop 71. Upper hoop 71 has a rim 74 with slots 75, which, with slots 73, allow air to exit from the interior of the drum. This adjustment of the acoustic openings allows variation in venting of air from the drum for controlling volume, pitch, tone, timbre, and stick response.

Ring members 76 and 77 connected by braces 78, shown in fig 7A, have a sliding fit inside drum shell 72 with operating lever rods 79 extending through

angled slots 73a. Ring members 76 and 77 are imperforate, and have sliding movement toward an end of the drum to cover or uncover slots 73 and 75.

OPERATION

Lever rods 79 are movable circumferentially in angled slots 73a to rotate ring members 76 and 77, and move them toward and away from an end of the drum shell to cover or uncover slots 73 and 75 to vary the venting of air from the drum and allow air to exit from the interior of the drum. This adjustment of the acoustic openings allows variation in venting of air from the drum for controlling volume, pitch, tone, timbre, and stick response.

Example 8

Referring to the drawings by numerals of reference, and especially to Figs. 8, 8A, 8B, and 8C, shows a drum assembly 80 with upper and lower drum tensioning rings 81 supported on drum shell 82. Drum tensioning rings 81 are secured on the drum shell 82 by conventional adjusting bolts or screws extending from ring to ring. Adjustment of the bolts or screws varies the tension in the drumhead skin or diaphragm to tune the sound of the drumheads.

Drum shell 82 has a plurality of acoustic vent openings or slots 83 positioned near the lower hoop 81. Upper ring 81 has an upstanding rim 84 with slots 85, which, together with slots 83, allow air to exit from the interior of the drum.

Split ring members 86 (Fig. 8C) have a coil spring 187 spreading the ring after being inserted for use. Coil spring 187 is fitted over a bolt 186 having a head 185 and washers 184. Ring members 86 have a sliding fit inside drum shell 82 with slots 86a matching slots 83 and 85. Operating levers 87 con-

nect d by handl 88, shown in Figs. 8 and 8B, are movable to make the ring slots 86a cover or uncover slots 83 and 85. This adjustment of the acoustic openings allows variation in venting of air from the drum for controlling volume, pitch, tone, timbre, and stick response.

OPERATION

Handle 88 rotates ring members 86, and moves them to cover or uncover slots 83 and 85 to vary the venting of air from the drum and allows air to exit from the interior of the drum. This adjustment of the acoustic openings allows variation in venting of air from the drum for controlling volume, pitch, tone, timbre, and stick response. Coil spring 187 keeps ring members 86 expanded inside drum shell 82 and drum ring 84.

Figs. 9 – 11 show embodiments having individual sliding closures for providing variable air vents for drums.

Example 9

Referring to the drawings by numerals of reference, and especially to Fig. 9 shows a drum assembly 90 with upper and lower drum tensioning hoops 91 and 92 supported on drum shell 93. Conventional adjusting screws secure drum-tensioning hoops 91 and 92 on the drum shell 93. Adjustment of the bolts or screws varies the tension in the drumhead skin or diaphragm to tune the sound of the drumheads.

Drum shell 93 has a plurality of acoustic vent openings 94, which allow air to exit from the interior of the drum. Valve disks 96 are positioned next to each opening 94, and are pivotable side to side to open or close the vent openings. This adjustment of the acoustic openings allows variation in venting of

air from the drum for controlling volume, pitch, tone, timbre, and stick response.

OPERATION

5 With the drumhead secured on the open upper end of drum shell 93, the drum is ready for use. Adjustment of the acoustic openings 94 by movement of disks 96 allows a variation in venting of air from the drum. This adjustment of the acoustic openings allows variation in venting of air from the drum for controlling volume, pitch, tone, timbre, and stick response.

Example 10

10 Referring to the drawings by numerals of reference, and especially to Fig. 10 shows a drum assembly 100 having upper and lower drum tensioning hoops 101 and 102 supported on drum shell 103. Conventional adjusting screws secure drum-tensioning hoops 101 and 102 on the drum shell 103. Adjustment of the bolts or screws varies the tension in the drumhead skin or diaphragm to tune the sound output of the drumheads.

15 Drum shell 103 has a plurality of acoustic vent openings 104, which allow air to exit from the interior of the drum. Valve slides 106 are supported close to each of the vent openings 104 in guides 105 and movable to close the openings. This adjustment of the acoustic openings allows variation in venting of air from the drum for controlling volume, pitch, tone, timbre, and stick response.

OPERATION

When the drumhead is secured on the open upper end of drum shell 103, the drum is ready for use. Adjustment of the acoustic openings 104 by move-

ment of valve slides 106 allows a variation in venting of air from the drum. This adjustment of the acoustic openings allows variation in venting of air from the drum for controlling volume, pitch, tone, timbre, and stick response.

Example 11

5 Referring to the drawings by numerals of reference, and especially to Fig. 11 shows a drum assembly 110 with upper and lower drum tensioning hoops 111 (upper hoop not shown) supported on drum shell 113. Conventional adjusting screws secure drum-tensioning hoops 111 on the drum shell 113. Adjustment of the bolts or screws varies the tension in the drumhead skin or
10 diaphragm to tune the sound of the drumheads.

Drum shell 113 has a plurality of acoustic vent openings 114, which allow air to exit from the interior of the drum. Guide members 115 are provided for each of the vent openings 114. Valve slides 116 are positioned in each of the guide members 115, and are slidable from a lower position opening said
15 vent openings to an upper position closing the openings. Valve slides 116 are connected to a working ring 117 for simultaneous movement. A bolt 118 extends through ring 117 and slot 119 in drum shell 113 to secure the ring and valve slides in any selected position. This adjustment of the acoustic openings allows variation in venting of air from the drum for controlling volume, pitch,
20 tone, timbre, and stick response.

OPERATION

When the drumhead is secured on the open upper end of drum shell 113, the drum is ready for use. Adjustment of the acoustic openings 114 by movement of ring 117 and slides 116 allows a variation in venting of air from the

drum. This adjustment of the acoustic openings allows variation in venting of air from the drum for controlling volume, pitch, tone, timbre, and stick response.

While this invention has been described fully and completely with special emphasis upon several preferred embodiments, it should be understood that within the scope of the appended claims, the invention can be practiced otherwise than as specifically described herein.